

CLAIMS

The invention, having been fully described in the foregoing, I hereby claim:

- 1 A self-aligning blade angle guide for use in the manual sharpening of razor blades, specialty blades, and arrow broadheads comprising:
 - (a) a clamp of predetermined configuration providing a means for securely gripping a blade to be sharpened,
 - (b) a frame adapted to be held in one hand of the user,
 - (c) a means for establishing and maintaining a predetermined sharpening angle,
 - (d) a means for coupling said clamp or extension thereof, to said frame or extension thereof, in a manner which provides for rotational capability of said clamp,

whereby the weight of said self-aligning blade angle guide, combined with any added pressure applied by the user, causes said clamp to rotate on its axis as said self-aligning blade angle guide is placed in operational position on the surface of a whetstone, thereby aligning the edge of a blade secured in said clamp with the surface of the whetstone, said rotational capability further enables the user to service both sides of a blades' edge with a single blade clamping operation by manually rotating said clamp 180 degrees between passes along the surface of the whetstone.

- 2 The self-aligning blade angle guide of claim 1 wherein the means of coupling said clamp to said frame comprises:
 - (a) an axle, said axle having a first end, and a second end,

- (b) said clamp further providing a means for attaching said first end of said axle to said clamp,
- (c) said frame further providing a means of attaching said second end of said axle to said frame,

whereby said clamp, said axle, and said frame may be coupled in combination, in a manner which enables said clamp to rotate on its axis in either direction with, or about said axle.

3 The self-aligning blade angle guide of claim 1 wherein said clamp comprises:

- (a) Two similar jaw members of predetermined shape arranged in opposition,
- (b) a shaft or lever of predetermined length, said shaft having a first end and a second end,
- (c) a means for attaching said first end of said shaft to at least one said jaw member,
- (d) a base providing means for positioning and retaining said jaw members and the attached said first end of said shaft in combination, in a manor which provides for pivotal movement of at least one said jaw member towards and away from the opposite said jaw member, said base further providing an opening through which said shaft extends,
- (e) a means for imparting reciprocal movement to said shaft,

whereby said reciprocal movement of said shaft causes the attached said jaw member to pivot towards and away from the opposite said jaw member, thereby enabling the clamp to securely grip, and release a blade.

4 The self-aligning blade angle guide of Claim 3 wherein the means for attaching said first end of said shaft to said jaw members comprises:

- (a) said shaft having a head of predetermined size and configuration at its first end,
- (b) each said jaw member further having an inside surface and an outside surface, and each said jaw member further having a similar recess formed in its said inside surface, each said recess being configured to accept one half of said head of said shaft,

whereby said jaw members may be arranged in opposition with said head of said shaft captured in said recesses, with said jaw members and said shaft being retained in combination by said base.

5 The self-aligning blade angle guide of Claim 1 wherein said clamp further includes:

- (a) A plurality of matched pairs of individual jaw members, each matched pair of said jaw members being configured and adapted to securely grip a different style of blade,
- (b) A means for releasably retaining an individual said matched pair of individual jaw members in said clamp,

whereby the user may selectably interchange the said matched pairs of jaw members within said clamp, for the purpose of sharpening blades of differing style or configuration.

6 The self-aligning blade angle guide of Claim 1 wherein the means of establishing and maintaining a predetermined sharpening angle comprises:

- (a) a bracket,
- (b) a roller,
- (c) a means of retaining said roller within said bracket in a manner that permits said roller to freely turn within said bracket,
- (d) a means of attaching said bracket and said roller in combination, to said frame in a manner which enables a user to present both said roller and a blade secured in said clamp to an abrasive surface

thereby enabling said roller, in combination with a blade secured in said clamp, to establish and maintain a predetermined sharpening angle, when said self-aligning blade angle guide is placed in its operational position.

- 7 The self-aligning blade angle guide of Claim 2 wherein the means of imparting reciprocal movement of said shaft thereby opening or closing the jaws comprises:

- (a) Said shaft being threaded and having a head at its first end,
- (b) Each jaw member having a recess formed into its inside surface, said recesses being configured to enable said jaw members to capture the head of said shaft between them,
- (c) A base providing a means for retaining said jaw members and the attached first end of said shaft or extension thereof in combination, said base further providing a means for pivotable movement of at least one of said jaw members towards and away from the opposite said jaw member.
- (d) A tensioning nut having threads which are compatible with the threads of the shaft, said tensioning nut being engaged on said second end of said shaft,

whereby tightening or loosening said tensioning nut moves said shaft reciprocally through said base, causing said jaw members to pivot towards or away from each other, thereby enabling said jaw members to grip and release a blade.

- 8 A self-aligning blade angle guide for use in the manual sharpening of razor blades, specialty blades, and arrow broadheads comprising:
- (a) an axle, said axle having a first end, and a second end,
 - (b) a clamp of predetermined configuration for securely gripping a blade to be sharpened, said clamp further providing a structure configured to couple said clamp to said first end of said axle
 - (c) a frame adapted to be held in one hand of a user, said frame providing a structure configured to couple said frame to said second end of said axle,
 - (d) a support structure adapted to position said self-aligning blade angle guide on the surface of a whetstone for the purpose of establishing and maintaining a predetermined sharpening angle,

whereby said axle, said clamp, said frame, and said support structure are coupled in combination in a manner which provides for rotational capability of said clamp, enabling said clamp to rotate as said self-aligning blade angle guide is placed on the surface of a whetstone, thereby aligning the edge of a blade secured in said clamp with the surface of the whetstone, and further enabling the user to service both sides of a blades' edge with a single blade clamping operation by manually rotating said clamp 180 degrees between passes along the surface of the whetstone.

Robert D. Swartz
9/6/03